CLAIMS

1. A polypeptide F' that induces an immune response against the hepatitis C virus, characterized in that it consists of 99 amino acids located between positions 43 and 141 of the hepatitis C virus polyprotein.

2. The polypeptide F' as claimed in claim 1, characterized in that it has the sequence SEQ ID No.1 below:

$X_1WVCX_2X_3X_4X_5RLPSGX_6NX_7X_8X_9X_{10}X_{11}X_{12}LX_{13}X_{14}RX_{15}X_{16}X_{17}PRX_{18}G$
$X_{19}GX_{20}SX_{21}GX_{22}X_{23}GX_{24}SX_{25}X_{26}X_{27}RX_{28}X_{29}X_{30}GX_{31}DGSCX_{32}PX_{33}X_{34}$
$X_{35}GLX_{36}GAX_{37}X_{38}TPX_{39}X_{40}GX_{41}X_{42}X_{43}WVX_{44}SSX_{45}X_{46}X_{47}X_{48}X_{49}X_{50}$
$X_{51}PX_{52}SWGX_{53}X_{54}RX_{55}SX_{56}$,

in which
X_1 is G, D, E, V or S, X_2 is A or V, X_3 is R, H or Q, X_4 is L, R, P, S or G, X_5 is G or E, X_6 is R, L or H, X_7 is L or P, X_8 is V, E or A, X_9 is E, V, D or G, X_{10} is G or D, X_{11} is D or V, X_{12} is N or S, X_{13} is S or F, X_{14} is P or Q, X_{15} is L, H, R, F, P or C, X_{16} is A, V or I, X_{17} is G, S, D, N, I or V, X_{18} is A, V or E, X_{19} is P, S or T, X_{20} is L, P, H or R, X_{21} is P or L, X_{22} is T or I, X_{23} is L, P or H, X_{24} is P or L, X_{25} is M or T, X_{26} is A, V or P, X_{27} is M, I or T, X_{28} is A or V, X_{29} is W, A, L or V, X_{30} is G or D, X_{31} is Q, L or R, X_{32} is H, L, P or R, X_{33} is V, A, E, K or T, X_{34} is A or V, X_{35} is L, R, H or P, X_{36} is V, A, I or G, X_{37} is P or L, X_{38} is R, Q, L, M, T, E or P, X_{39} is G or D, X_{40} is V, A or G, X_{41} is R or H, X_{42} is V or A, X_{43} is I or T, X_{44} is R, G or K, X_{45} is I or T, X_{46} is P or L, X_{47} is S or L, X_{48} is H or R, X_{49} is A or V, X_{50} is A, V or G, X_{51} is S or L, X_{52} is T or I, X_{53} is T or

I, X_{54} is F, Y or S, X_{55} is S or L and X_{56} is A, V, G or H.

3. The polypeptide F' as claimed in claim 2, characterized in that it is chosen from the polypeptides of sequences SEQ ID No.2 to SEQ ID No.150, preferably the sequence SEQ ID No.2.

4. The polypeptide F' as claimed in claim 1, characterized in that it has the sequence SEQ ID No.151 below:

$X_1WVCX_2X_3X_4X_5X_{57}LX_{58}X_{59}X_{60}X_6X_{61}X_7AX_9X_{10}X_{11}X_{12}X_{62}X_{13}PX_{63}X_{15}X_{16}$
$X_{17}X_{64}X_{65}X_{18}X_{66}PGX_{20}SX_{21}GTX_{23}GX_{24}X_{67}X_{25}X_{26}X_{27}RAX_{29}X_{30}X_{68}X_{31}X_{69}$
$GX_{70}CX_{32}X_{71}X_{33}X_{34}X_{35}X_{72}X_{73}X_{36}GX_{74}X_{37}X_{38}TPGX_{40}X_{75}X_{41}AX_{43}X_{76}X_{77}$
$X_{44}SSX_{45}X_{46}X_{47}X_{48}X_{49}X_{50}\ X_{51}X_{78}X_{52}SWGX_{53}X_{54}RSX_{79}X_{56}$,

in which

X_1 is D, N, S, Y or G, X_2 is A or V, X_3 is R, Q, K or L, X_4 is R, Y, C, F, H, L or P, X_5 is V, A or T, X_6 is H, R or Q, X_7 is L or P, X_9 is D, V, N, R or T, X_{10} is G, D or S, X_{11} is D, V, A, G or E, X_{12} is S, N or T, X_{13} is S, P or F, X_{15} is R, H or L, X_{16} is V or A, X_{17} is G, R, E, H or V, X_{18} is A or D, X_{20} is L, P or R, X_{21} is P or L, X_{23} is L or P, X_{24} is P or L, X_{25} is M or T, X_{26} is V, G, A or E, X_{27} is M, T or I, X_{29} is A or V, X_{30} is G, V or D, X_{31} is Q or R, X_{32} is P or L, X_{33} is A or V, X_{34} is A or V, X_{35} is P or L, X_{36} is L, A, V, R, I or P, X_{37} is Q, K or P, X_{38} is M or T, X_{40} is V, G, D, E or A, X_{41} is P, H or L, X_{43} is I or T, X_{44} is R or K, X_{45} is I or T, X_{46} is P or L, X_{47} is S or L, X_{48} is R or H, X_{49} is A or V, X_{50} is D, G, A or V, X_{51} is S or L, X_{52} is T, I or A, X_{53} is T or I, X_{54} is F or S, X_{56} is A or V, X_{57} is K, R or N, X_{58} is L, P or Q, X_{59} is S or N, X_{60} is G or D, X_{61} is S or N, X_{62} is L

or P, X_{63} is R or G, X_{64} is A, P or L, X_{65} is R, K, E or T, X_{66} is G or D, X_{67} is S, Y or F, X_{68} is G or W, X_{69} is G or D, X_{70} is S or F, X_{71} is P, H, R or L, X_{72} is V, A, D or G, X_{73} is H, L, P, Q or R, X_{74} is A or P, X_{75} is G or D, X_{76} is W or L, X_{77} is V or A, X_{78} is P or L and X_{79} is S, L or Q.

5. The polypeptide F' as claimed in claim 4, characterized in that it is chosen from the polypeptides of sequence SEQ ID No.152 to SEQ ID No.176, preferably the sequence SEQ ID No.152.

6. A nucleotide sequence encoding any one of the polypeptides F' as defined in any one of claims 1 to 5.

7. An epitope derived from the protein sequence of the polypeptide F' as defined in claim 1, characterized in that it induces an immune response against the hepatitis C virus and consists of 9 amino acids located between positions 40 and 48 of the hepatitis C virus polyprotein.

8. The epitope as claimed in claim 7, characterized in that it has one of the sequences SEQ ID No.177 to SEQ ID No.235, preferably the sequence SEQ ID No.177.

9. An epitope derived from the protein sequence of the polypeptide F' as defined in claim 1, characterized in that it induces an immune response against the hepatitis C virus and consists of 9 amino acids located between positions 43 and 51 of the hepatitis C virus polyprotein.

10. The epitope as claimed in claim 9, characterized

in that it has one of the sequences SEQ ID No.236 to SEQ ID No.283, preferably the sequence SEQ ID No.236.

11. An epitope derived from the protein sequence of the polypeptide F' as defined in claim 1, characterized in that it induces an immune response against the hepatitis C virus and consists of 9 amino acids located between positions 50 and 58 of the hepatitis C virus polyprotein.

12. The epitope as claimed in claim 11, characterized in that it has one of the sequences SEQ ID No.284 to SEQ ID No.358, preferably the sequence SEQ ID No.284.

13. An epitope derived from the protein sequence of the polypeptide F' as defined in claim 1, characterized in that it induces an immune response against the hepatitis C virus and consists of 9 amino acids located between positions 73 and 81 of the hepatitis C virus polyprotein.

14. The epitope as claimed in claim 13, characterized in that it has one of the sequences SEQ ID No.359 to SEQ ID No.434, preferably the sequence SEQ ID No.359.

15. A nucleotide sequence encoding any one of the epitopes as defined in claims 7 to 14.

16. An expression vector, characterized in that it comprises a nucleotide sequence as claimed in either of claims 6 and 15, and also the means required for its expression.

17. An expression vector, characterized in that it

comprises at least two nucleotide sequences as claimed in claim 15, and also the means required for its expression.

18. A microorganism or a host cell transformed with at least one expression vector as defined in claims 16 and 17.

19. An antibody directed against one of the polypeptides F' as defined in claims 1 to 5 or against one of the epitopes as defined in claims 7 to 14.

20. The use of one of the polypeptides F' as defined in claims 1 to 5 or of one of the epitopes as defined in claims 7 to 14, for preparing a drug intended to inhibit, prevent or treat an infection caused by the hepatitis C virus in an animal, preferably a human.

21. A pharmaceutical composition, in particular a vaccine, comprising, by way of active substance, at least one of the polypeptides F' as defined in claims 1 to 5, at least one of the epitopes as defined in claims 7 to 14, or else at least one of the nucleotide sequences as defined in claims 6 or 15 placed under the control of elements required for constitutive and/or inducible expression of said polypeptides F' or epitopes, or else at least one antibody as defined in claim 19, in combination with a pharmaceutically appropriate vehicle.

22. A diagnostic composition for detecting and/or quantifying the hepatitis C virus, comprising at least one of the polypeptides F' as defined in claims 1 to 5, at least one of the nucleotide sequences as defined in claim 6, or else at least one antibody as defined in claim 19.

23. A method for detecting and/or quantifying the hepatitis C virus in a biological sample taken from an individual who may be infected with said virus, such as plasma, serum or tissue, characterized in that it comprises the steps consisting in:

- bringing said biological sample into contact with the antibodies as claimed in claim 19 under conditions that allow the formation of a complex between the virus and the antibody, and

- detecting and/or quantifying the formation of said complex by any appropriate means.

24. The use of the composition as claimed in claim 22, for the *in vitro* diagnosis of the hepatitis C virus in a biological sample or specimen.